

Claims 1- 15 (canceled)

Claim 16 (new): Method for creating laser-induced damage reflecting illuminated light by focusing pulsed laser radiation and generating the following processes:

- creation of an initial low-density free electron concentration;
- buildup of this electron concentration and creation of the concentrated plasma;
- absorption of the remainder of the laser pulse by the resulting plasma;
- an increase in temperature to a value of several thousands of degrees;
- the generation of an initial thermally-induced sound wave;
- the expansion of created liquid;
- the generation of a pressure-induced sound wave;
- the formation of the cracks at the liquid/solid interface.

Claim 17 (new): Method for creating laser-induced damage with smooth star structure by controlling the material state about that point of a transparent material, at which the breakdown is generated.

Claim 18 (new): The method in accordance with claim 17 wherein the value of breakdown threshold at the damage area creation is reduced.

Claim 19 (new): The method in accordance with claim 17 wherein a temperature difference of plasma and surrounding material is reduced.

Claim 20 (new): The method in accordance with claim 17 wherein the variation of gradient temperature at the area of the damage creation is reduced.

Claim 21 (new): The method in accordance with claim 17 wherein the variation of a modulus of elasticity at the damage area creation is reduced.

Claim 22 (new): Method for creating laser-induced damage with smooth star structure by focusing two kind of laser radiations at the predetermined point of a transparent material:

the first kind of laser radiation changes the material state about that point at which laser-induced damage is produced; the second kind of laser radiation generates breakdown at the point

Claim 23 (new): The method in accordance with claim 22 wherein the said first laser radiation reduces the value of the breakdown threshold.

Claim 24 (new): The method in accordance with claim 22 wherein the said first laser radiation reduces the value of temperature difference of plasma and surrounding material.

Claim 25 (new): The method in accordance with claim 22 wherein the said first laser radiation reduces the variation of gradient temperature at area of damage creation.

Claim 26 (new): The method in accordance with claim 22 wherein the said first laser radiation reduces the variation of a modulus of elasticity at the damage area creation.

Claim 27 (new): The method in accordance with claim 22 wherein the said first laser radiation heats the predetermined glass area to the vitrify temperature and the second laser radiation being focusing at a point of this area generates the breakdown.

Comments:

The invention, according to its title, discloses two different ways for production of high quality laser-induced damage images: the first is based on the material processing made before image creation, and the second is based on the material processing made during image creation.

Now I restrict the invention by only disclosing the second way.

CLAIM 16 discloses the method for creating laser-induced damage by focusing pulse laser radiation, which generates (during damage creation) the whole scale of processes. Analyzing these processes we see how the method can be modernized so that it would be possible to reduce star structure of laser-induced damages. In particular, it is possible during damage creation to change the material state about that point of a transparent material, at which the breakdown is generated. CLAIM 17 and CLAIM 22 disclose the methods which realizes this way.

Respectfully submitted,

By



Date: November, 10, 2003

Igor Troitski.

853 Arrowhead Trail

Henderson, NV 89015